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ABSTRACT

The Institutional Renewal Scale (IRS) is a twelve-items attitude scale designed to measure attitudes toward educational innovation in schools. The development of the scale is described and a copy of the scale is included. Items were selected on the basis of both scale values and discrimination indices. A comparison was made between the scores of 19 high school teachers who had implemented educational innovations during the previous year and 19 randomly selected secondary school teachers. Correlations were computed between IRS scores and various other attitude and personality questionnaire scores. (Author/CTM)

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THE INSTITUTIONAL RENEWAL (IRS) SCALE: AN INSTRUMENT TO MEASURE ATTITUDES TOWARD EDUCATIONAL INNOVATION

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Synopsis

The Institutional Renewal Scale (IRS) is a twelve-item attitude scale designed to measure attitudes toward educational innovation in schools. The scale reflects the use of a scale-discrimination technique in its construction. This article describes the development of the scale and provides a sample of the items used.

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*Footnote

A longer, more detailed description of development and analysis procedures have been deposited with the ERIC Clearinghouse on Tests, Measurement, and Evaluation - document # .

The Institutional Renewal Scale

The Institutional Renewal Scale (IRS) is designed to measure attitudes toward the general and intuitive concept of educational innovation. This concept adumbrates a process of institutional change and renewal which usually involves such specific foci as faculty, instructional, and organizational development (Gaff, 1975). The IRS was developed among, and intended for, an academic population in educational settings, although its use may be extended to most individuals concerned with educational innovation. Even though it was developed in cooperation with a large number of secondary-school teachers, the item content of the scale would appear to be applicable to teachers at all levels of education. Now that a literature on change exists, and continual renewal is urged as a desirable state (Lindquist, 1976), the IRS may provide one means of monitoring change in the attitudes of those involved in the process.

DEVELOPMENT

As a means of avoiding the shortcomings of the standard Thurstone or Likert scaling techniques construction of the Institutional Renewal Scale (IRS) involved the use of a scale-discrimination technique described by Edwards (1957). The investigator first formed a pool of items made up of promising items culled from unpublished pilot studies carried out and described elsewhere (Schlesser, 1970). A group of secondary-school educators (N = 48) served as judges to rate twenty of these items in terms of favorableness to educational innovation. Their ratings furnished data for the initial scale and Q values. A second group of high-school teachers

(N = 126) responded in terms of agreement/disagreement with each item. The data from this sample were used to calculate the individual phi coefficients. In the selection of items for a second version an effort was made to use items at scale values more than .50 of an interval apart. In addition whenever two or more items had similar scale values, that item which had the lower Q value was considered the one suitable for inclusion.

After the elimination of the unsatisfactory items the scale contained twelve items. Another sample (N = 378) of high-school teachers completed

(PLACE TABLE 1 HERE)

the revised version. This administration of the scale resulted in the accumulation of data for computing new phi coefficients and for performing a factor analysis. The method used for the analysis was principal components with communalities set at 1.00. The resulting two dimensions accounted for 45 percent of the original variance. Use of a normalized varimax procedure resulted in a simple structure for the two factors. The scale loads heavily on two factors, one the obverse of the other and has positive manifold. It was not possible at the time to readminister the scale to even a sample of respondents; however, the coefficient of consistency is .82.

A further analysis of the scale in order to improve scalability resulted in the elimination of three items. The scale in this reduced form contains nine items and has a coefficient of reproducibility estimated to be .88.

An exploration of the concurrent validity of the IRS involved its correlation with scores obtained from administration of two other instruments designed to measure teacher attitudes. A group of secondary-school teachers who had implemented an educational innovation in their classroom during the

previous year (N = 19) responded to the Minnesota Teacher Attitude Inventory (Cook, Leeds, and Corris, 1951) and to the Attitudes Toward Education Scale (Kerlinger, 1968). Scores on the Inventory were revised to conform to a logical scoring key; the score on the second scale was a difference score derived from Factors A and B on the seventh version of that scale. The group's scores on the IRS correlated with scores on the Minnesota scale, $r = .77$ and with the Attitudes Toward Education Scale, $r = .58$.

A comparision of the scores of the experimental group with a control group of nineteen secondary-school teachers selected at random from the total group originally used to develop the scale (N = 359) indicate that the scale does discriminate among groups. A Mann-Whitney U test resulted in the rejection of the null hypothesis that the two samples had been drawn from the same population in terms of their favorableness to educational innovation: $U = 310$, $Z = 3.77$, $p < .0001$ (Siegel, 1956).

The scores of the criterion group on the Sixteen PF Questionnaire Test (Cattell and Eber, 1966) correlated most with such first-order factors as outgoingness, $r = .41$; forthrightness $r = .43$; placidity, $r = .55$; and relaxedness, $r = .41$. Correlations with second-order factors included more adjusted than anxious ($r = .48$) and more extroverted than introverted ($r = .37$).

SUMMARY

The IRS is a relatively brief scale which approximates the best qualities of a cumulative scale. Its development took place with the cooperation of a number of different groups of secondary-school teachers. Scores on the scale distinguished a group of known innovators from respondents about whom little was known, and they correlated with scores obtained from altitudinal scales reported in the literature. Finally these scores suggest that items in the scale are related to personality constructs believed to characterize the innovator.

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TABLE 1

Two items from the Institutional Renewal Scale, scale values and phi coefficients.

Item	Scale Value	phi Coefficients
2. I believe that educational innovation keeps alive what is best in education.	7.50	.76
7. There is a need to innovate but I do not find what I want in most current educational innovations.	4.21	.48

LIST OF APPENDICES

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Appendix A

Mean scale and Q values of items rated by judges (N = 48) including items used and items not used

Items Used	Scale Value	Q
1. School professionals should be willing to revise their beliefs and attitudes in order to accommodate more educational innovations.	7.58	1.11
2. I believe that educational innovation keeps alive what is best in education.	7.50	1.08
3. School-wide emphasis on trying educational innovations should be a prominent characteristic of a school.	7.26	.96
4. Most school professionals should become much more enthusiastic about educational innovation than they presently are.	7.03	.98
5. Most educational innovations suggest unlimited possibility for schools.	6.73	1.57
6. Experience with theprocess of innovating may well be worth the risks involved in innovating.	6.58	1.08
7. There is a need to innovate but I do not find what I want in most current educational innovations.	4.21	1.88
8. I am indifferent to the pros and cons about educational innovations but would not like to see my attitude become general.	3.77	1.62
9. The educational innovations that gain acceptance seem to me to do so at the expense of equally valid techniques.	2.83	1.53
10. I think that too much money is being spent on educational innovations when compared with the benefit that is being derived.	1.95	1.05
11. The appeal for the use of more educational innovations than is currently in use appears to me to be a response to fashion rather than to sober judgment.	1.91	1.10
12. In my opinion most educational innovations are a hindrance to a sound education because so many of them depend on exaggerated claims.	1.38	.59

Items Not Used	Scale Value	Q
1. Most educational innovations represent positive gains over what is now in widespread use.	7.05	1.40
2. The use of more innovations than at present is one of the most realistic solutions to the curricular problems facing education.	6.91	1.64
3. Most schools should adopt educational innovations even if this mean almost total reorganization.	6.50	1.71
4. The idea of adopting more educational innovations than at present is fundamentally sound but some of its proponents do not realize what it involves.	6.37	1.62
5. I believe in most educational innovations, but have some mental reservations about them.	4.91	1.68
6. Learners would be better off if school professionals put more effort into improving their existing programs rather than into creating new ones.	2.50	2.07
7. An insistence that they use educational innovations more often than not is a technique administrators use to keep school professionals in line.	2.08	1.14
8. In my opinion most educational innovations suggested for use in the majority of schools are little better than what they are to replace.	1.88	1.43

Appendix B

March 1970

Experimental Version

*This is a preliminary version. There is no need to identify yourself in any way.

Instructions: This questionnaire contains twelve statements about educational innovation. An answer is neither right nor wrong; it merely represents a degree of opinion, namely how much you agree or disagree with the statement.

Example:

	Strongly Agree SA	Agree A	Mildly Agree MA	Mildly Disagree MD	Disagree D	Strongly Disagree SD
Most educational innovations represent positive gains over what is now in widespread use.	SA	A	MA	MD	(D)	SD

Explanation: This person mildly disagrees with the statement.

Definition: Educational innovation means on this occasion a change in school organization, curriculum or method designed to improve instruction: e.g. independent study, programmed learning, computer-assisted instruction, flexible scheduling, multiunit schools, to name a few.

Before you begin to indicate your answers on the reverse side, please answer the following question.

Which category best describes your own attitude toward the introduction of new ideas and techniques at the secondary-school level? (Darken the appropriate letter.)

(A) *Very favorable* (B) *Quite favorable* (C) *About equally favorable and unfavorable* (D) *Quite unfavorable* (E) *Very unfavorable*

Please turn the sheet over and begin.

Please read the instructions on the other side before completing this side.

BEGIN HERE

CIRCLE ONE RESPONSE CATEGORY FOR EACH STATEMENT

	Strongly Agree SA	Agree A	Mildly Agree MA	Mildly Disagree MD	Disagree D	Strongly Disagree SD
1. I think that too much money is being spent on educational innovations when compared with the benefit that is being derived.	SA	A	MA	MD	D	SD
2. I am indifferent to the pros and cons about educational innovations but would not like to see my attitude become general.	SA	A	MA	MD	D	SD
3. There is a need to innovate but I do not find what I want in most current educational innovations.	SA	A	MA	MD	D	SD
4. I believe that educational innovation keeps alive what is best in education.	SA	A	MA	MD	D	SD
5. Most school professionals should become much more enthusiastic about educational innovation than they presently are.	SA	A	MA	MD	D	SD
6. School-wide emphasis on trying educational innovations should be a prominent characteristic of a school.	SA	A	MA	MD	D	SD
7. The educational innovations that gain acceptance seem to me to do so at the expense of equally valid techniques.	SA	A	MA	MD	D	SD
8. Most educational innovations suggest unlimited possibilities for schools.	SA	A	MA	MD	D	SD
9. In my opinion most educational innovations are a hindrance to a sound education because so many of them depend on exaggerated claims.	SA	A	MA	MD	D	SD
10. The appeal for the use of more educational innovations than are currently in use appears to me to be a response to fashion rather than to sober judgment.	SA	A	MA	MD	D	SD
11. School professionals should be willing to revise their beliefs and attitudes in order to accommodate more educational innovations.	SA	A	MA	MD	D	SD
12. Experience with the process of innovating may well be worth the risks involved in innovating.	SA	A	MA	MD	D	SD

THANK YOU.

Please return this sheet to _____

Appendix C

Raw Data: Distribution of responses, dichotomized response categories, and discriminating power of items

Item 1 School professionals should be willing to revise their beliefs and attitudes in order to accommodate more educational innovations.

Response Category	Weight	Low Group	High Group
		7	53
Strongly Agree	6	32	41
Agree	5	43	5
Mildly Agree	4	9	1
Mildly Disagree	3	7	1
Disagree	2	4	1
Strongly Disagree	1		

Response Categories	Low Group	High Group	Total
1	39	94	133
0	63	8	71
Total	102	102	204

Check: N = 204

Scale Value 7.58

Phi coefficient .57

Item 2 I believe that educational innovation keeps alive what is best in education.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	3	46
Agree	5	16	50
Mildly Agree	4	36	4
Mildly Disagree	3	19	1
Disagree	2	18	0
Strongly Disagree	1	10	1

Response Categories	Low Group	High Group	Total
1	19	96	115
0	83	6	89
Total	102	102	204

Check: N = 204

Scale Value 7.50

Phi coefficient .76

Item 3 School-wide emphasis on trying educational innovations should be a prominent characteristic of a school.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	5	44
Agree	5	16	47
Mildly Agree	4	29	6
Mildly Disagree	3	20	3
Disagree	2	23	1
Strongly Disagree	1	9	1

Response Categories	Low Group	High Group	Total
1	21	91	112
0	81	11	92
Total	102	102	204

Check: N = 204

Scale Value 7.26

Phi coefficient .69

Item 4 Most school professionals should become much more enthusiastic about educational innovation than they presently are.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	5	59
Agree	5	19	36
Mildly Agree	4	43	6
Mildly Disagree	3	15	1
Disagree	2	15	0
Strongly Disagree	1	5	0

Response Categories	Low Group	High Group	Total
1	24	95	119
0	78	7	85
Total	102	102	204

Check: N = 204

Scale Value 7.03

Phi coefficient .71

Item 5 Most educational innovations suggest unlimited possibilities for schools.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	1	20
Agree	5	15	49
Mildly Agree	4	21	25
Mildly Disagree	3	25	5
Disagree	2	26	3
Strongly Disagree	1	14	0

Response Categories	Low Group	High Group	Total
1	37	94	131
0	65	8	73
Total	102	102	204

Check: N = 204

Scale Value 6.73

Phi coefficient .58

Item 6 Experience with the process of innovating may well be worth the risks involved in innovating.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	3	58
Agree	5	16	39
Mildly Agree	4	46	5
Mildly Disagree	3	17	0
Disagree	2	16	0
Strongly Disagree	1	4	0

Response Categories	Low Group	High Group	Total
1	19	97	116
0	83	5	88
Total	102	102	204

Check: N = 204

Scale Value 6.58

Phi coefficient .77

Item 7 There is a need to innovate but I do not find what I want in most current educational innovations.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	13	1
Agree	5	44	9
Mildly Agree	4	15	13
Mildly Disagree	3	17	32
Disagree	2	11	35
Strongly Disagree	1	2	12

Response Categories	Low Group	High Group	Total
1	72	23	95
0	30	79	109
Total	102	102	204

Check: N = 204

Scale Value 4.21

Phi coefficient .48

Item 8 I am indifferent to the pros and cons about educational innovations but would not like to see my attitude become general.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	65	21
Agree	5	33	31
Mildly Agree	4	1	22
Mildly Disagree	3	2	9
Disagree	2	0	16
Strongly Disagree	1	1	3

Response Categories	Low Group	High Group	Total
1	98	52	150
0	4	50	54
Total	102	102	204

Check: N = 204

Scale Value 3.77

Phi coefficient .53

Item 9 The educational innovations that gain acceptance seem to me to do so at the expense of equally valid techniques.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	22	0
Agree	5	59	5
Mildly Agree	4	11	30
Mildly Disagree	3	7	33
Disagree	2	2	24
Strongly Disagree	1	1	10

Response Categories	Low Group	High Group	Total
1	81	5	86
0	21	97	118
Total	102	102	204

Check: N = 204

Scale Value 2.83

Phi coefficient .80

Item 10 I think that too much money is being spent on educational innovations when compared with the benefit that is being derived.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	55	0
Agree	5	39	7
Mildly Agree	4	3	12
Mildly Disagree	3	3	37
Disagree	2	0	31
Strongly Disagree	1	2	15

Response Categories	Low Group	High Group	Total
1	94	7	101
0	8	95	103
Total	102	102	204

Check: N = 204

Scale Value 1.95

Phi coefficient .93

Item 11 The appeal for the use of more educational innovations than are currently in use appears to me to be a response to fashion rather than to sober judgment.

Response Category	Weight	Low Group	High Group
Strongly Agree	6	32	1
Agree	5	51	0
Mildly Agree	4	8	14
Mildly Disagree	3	10	35
Disagree	2	1	38
Strongly Disagree	1	0	14

Response Categories	Low Group	High Group	Total
1	83	1	84
0	19	101	120
Total	102	102	204

Check: N = 204

Scale Value 1.91

Phi coefficient .82

Item 12 In my opinion most educational innovations are a hindrance to a sound education because so many of them depend on exaggerated claims.

Response Category	Weight	Low Group	High Group
		44	0
Strongly Agree	6	52	12
Agree	5	6	33
Mildly Agree	4	0	28
Mildly Disagree	3	0	21
Disagree	2	0	8
Strongly Disagree	1		

Response Categories	Low Group	High Group	Total
1	96	12	108
0	6	90	96
Total	102	102	204

Check: N = 204

Scale Value 1.38

Phi coefficient .82

Appendix D

A raw data matrix which includes nine items ordered according to transitivity

Item	1	4	6	3	8	12	10	9	11
1	-	206	185	162	37	70	80	90	87
4		-	173	155	43	94	94	106	109
6			-	143	55	98	119	125	129
3				-	58	104	120	138	134
8					-	55	69	130	138
12						-	115	130	144
10							-	150	150
9								-	169
11									-

Appendix E

A chi-square test for item-discrimination scalability

Item	10	01	d-1	$d-1^2$	1	χ^2	p (1df)
1-4	58	37	20	400	95	4.21	<.05
4-6	70	47	22	484	117	4.14	<.05
6-3	77	42	34	1156	119	9.71	<.01
3-8	135	34	100	10000	169	59.17	<.01
8-12	95	37	57	3249	132	24.61	<.01
12-10	72	35	36	1296	107	10.98	<.01
10-9	81	37	43	1849	118	15.67	<.01
9-11	62	47	14	196	109	1.80	<.20

Marginal and coefficient of reproducibility for

1. The twelve-item scale

Item	p	q	pq	2pq	Ø	1-Ø	(1-Ø)(2pq)	1-(1-Ø)(2pq)
1.	.698	.301	.2101	.4202	.57	.43	.1807	.8193
2.	.584	.415	.2424	.4848	.76	.24	.1164	.8836
3.	.498	.510	.2494	.4988	.69	.31	.1546	.8454
4.	.642	.357	.2292	.4584	.71	.29	.1329	.8671
5.	.595	.404	.2404	.4808	.58	.42	.2019	.7981
6.	.582	.417	.2427	.4854	.77	.23	.1116	.8884
7.	.502	.497	.2495	.4990	.48	.52	.2595	.7405
8.	.756	.243	.1837	.3674	.53	.47	.1727	.8273
9.	.388	.611	.2371	.4742	.80	.20	.0958	.9042
10.	.505	.494	.2495	.4990	.93	.07	.0349	.9651
11.	.428	.571	.2444	.4888	.82	.18	.0878	.9122
12.	.603	.396	.2388	.4776	.82	.18	.0860	.9140
								10.3652

R = .86

2. The nine-item scale

Item	
1	.8193
4	.8671
5	.8884
3	.8454
8	.8273
12	.9140
10	.9651
9	.9042
11	.9122
	7.9430
	.8825

R = .88

Appendix G

Institutional Renewal Scale: Normalized varimax rotation

Item	Factor 1	Factor 2
1	.678	.090
2	.585	.346
3	.750	.015
4	.732	.154
5	.453	.117
6	.546	.428
7	−.019	.547
8	.008	.545
9	.204	.657
10	.344	.642
11	.361	.635
12	.452	.571

Appendix H

Mann-Whitney U test data for experimental (innovator) and control (other) groups

E	Rank	C	Rank
4.89	35	4.54	31
4.89	35	4.13	23
4.89	35	3.98	21.5
4.89	35	3.98	21.5
4.89	35	3.78	18
4.74	32	3.76	17
4.38	29.5	3.74	16
4.38	29.5	3.06	14
4.33	27	2.71	13
4.33	27	2.69	12
4.33	27	2.11	9.5
4.17	25	2.11	9.5
4.15	24	1.88	8
4.07	22	1.77	7
3.87	19.5	1.72	6
3.87	19.5	1.14	5
3.41	15	0.94	4
2.63	11	0.82	3
0.31	1	0.55	2

$$U = (19)^2 + \frac{19(20)}{2} - 241$$

$$U = 361 + 190 - 241$$

$$U = 310$$

$$Z = \frac{310 - \frac{361}{2}}{\sqrt{\frac{(361)(39)}{12}}} = \frac{129.5}{34.253} = 3.77$$

$$p < .0001$$

Appendix I

Correlation of the Institutional Renewal Scale with Selected Attitude and Personality Measures

	IRS		
	.770		Minnesota Teacher Attitude Inventory
	.583		Attitudes Toward Education Scale
			Sixteen PF Questionnaire Test
A	.423	+	Reserved vs. outgoing
B	-.254	-	Less intelligent vs. more intelligent
C	.135	+	Affected by feelings vs. emotionally stable
E	.043	+	Humble vs. assertive
F	.217	+	Sober vs. Happy-go-lucky
G	-.019	-	Expedient vs. conscientious
H	.313	+	Shy vs. venturesome
I	.200	+	Tough minded vs. tender minded
L	-.156	-	Trusting vs. suspicious
M	.067	+	Practical vs. imaginative
N	-.426	-	Forthright vs. shrewd
O	-.546	-	Placid vs. apprehensive
Q_1	-.203	-	Conservative vs. experimenting
Q_2	-.256	-	Group dependent vs. self sufficient
Q_3	-.016	-	Undisciplined self conflict - controlled
Q_4	-.410	-	Relaxed vs. tense
I	-.480	-	Adjustment vs. anxiety
II	.373	+	Introversion vs. extraversion
III	-.343	-	Tender minded emotionality vs. alert poise
IV	-.280	-	Subduedness vs. independence